

What is claimed is:

1. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:

a) an amino acid sequence of SEQ ID NO:1,

b) a naturally occurring amino acid sequence having at least 95% sequence identity to an amino acid sequence of SEQ ID NO:1,

c) a biologically active fragment of an amino acid sequence of SEQ ID NO:1, and

d) an immunogenic fragment of an amino acid sequence of SEQ ID NO:1.

2. An isolated polypeptide of claim 1, having a sequence of SEQ ID NO:1.

3. A composition comprising an effective amount of a polypeptide of claim 1 and an acceptable excipient.

4. A composition of claim 3, wherein the polypeptide has the sequence of SEQ ID NO:1.

5. An isolated polynucleotide encoding a polypeptide of claim 1.

6. A recombinant polynucleotide comprising a promoter sequence operably linked to a polynucleotide of claim 5.

7. A cell transformed with a recombinant polynucleotide of claim 6.

8. A method for producing a polypeptide of claim 1, the method comprising:

a) culturing a cell under conditions suitable for expression of the polypeptide, wherein said cell is transformed with a recombinant polynucleotide, and said recombinant polynucleotide comprises a promoter sequence operably linked to a polynucleotide encoding the polypeptide of claim 1, and

b) recovering the polypeptide so expressed.

9. An isolated antibody which specifically binds to a polypeptide of claim 1.

10. An isolated polynucleotide comprising a polynucleotide sequence selected from the

group consisting of:

- a) a polynucleotide sequence of SEQ ID NO:2,
- b) a naturally occurring polynucleotide sequence having at least 95% sequence identity to a polynucleotide sequence of SEQ ID NO:2,
- 5 c) a polynucleotide sequence complementary to a),
- d) a polynucleotide sequence complementary to b), and
- e) an RNA equivalent of a)-d).

11. An isolated polynucleotide comprising at least 60 contiguous nucleic acids of claim

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12. A method for detecting a target polynucleotide in a sample, said target polynucleotide having a sequence of a polynucleotide of claim 10, the method comprising:

- a) hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to said target polynucleotide in the sample, and which probe specifically hybridizes to said target polynucleotide, under conditions whereby a hybridization complex is formed between said probe and said target polynucleotide or fragments thereof, and
- b) detecting the presence or absence of said hybridization complex, and, optionally, if present, the amount thereof.

13. A method of claim 12, wherein the probe comprises at least 60 contiguous nucleotides.

14. A method for detecting a target polynucleotide in a sample, said target polynucleotide having a sequence of a polynucleotide of claim 10, the method comprising:

- a) amplifying said target polynucleotide or fragment thereof using polymerase chain reaction amplification, and
- b) detecting the presence or absence of said amplified target polynucleotide or fragment thereof, and, optionally, if present, the amount thereof.

15. A method for screening a compound for effectiveness as an agonist of a polypeptide of claim 1, the method comprising:

- a) exposing a sample comprising a polypeptide of claim 1 to a compound, and
- b) detecting agonist activity in the sample.

16. A method for screening a compound for effectiveness as an antagonist of a polypeptide of claim 1, the method comprising:

- a) exposing a sample comprising a polypeptide of claim 1 to a compound, and
- b) detecting antagonist activity in the sample.

17. A method for screening a compound for effectiveness in altering expression of a target polynucleotide, wherein said target polynucleotide comprises a polynucleotide sequence of SEQ ID NO:2, the method comprising:

- a) exposing a sample comprising the target polynucleotide to a compound, under conditions suitable for the expression of the target polynucleotide,
- b) detecting altered expression of the target polynucleotide, and
- c) comparing the expression of the target polynucleotide in the presence of varying amounts of the compound and in the absence of the compound.

18. A method for assessing toxicity of a test compound, said method comprising:

- a) treating a biological sample containing nucleic acids with the test compound;
- b) hybridizing the nucleic acids of the treated biological sample with a probe comprising at least 20 contiguous nucleotides of a polynucleotide of claim 10 under conditions whereby a specific hybridization complex is formed between said probe and a target polynucleotide in the biological sample, said target polynucleotide comprising a polynucleotide sequence of a polynucleotide of claim 8 or fragment thereof;
- c) quantifying the amount of hybridization complex; and
- d) comparing the amount of hybridization complex in the treated biological sample with the amount of hybridization complex in an untreated biological sample, wherein a difference in the amount of hybridization complex in the treated biological sample is indicative of toxicity of the test compound.

19. A diagnostic test for a condition or disease associated with the expression of NSYN-1 in a biological sample comprising the steps of:

- a) combining the biological sample with an antibody of claim 9, under conditions

suitable for the antibody to bind the polypeptide and form an antibody: polypeptide complex; and

- b) detecting the complex, wherein the presence of the complex correlates with the presence of the polypeptide in the biological sample.

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20. The antibody of claim 9, wherein the antibody is:

- (a) a chimeric antibody;
- (b) a single chain antibody;
- (c) a Fab fragment;
- (d) a F(ab')<sub>2</sub> fragment;
- (e) a Fv fragment; or
- (f) a humanized antibody.

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21. A pharmaceutical composition comprising an antibody of claim 9 and a pharmaceutically acceptable excipient.

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22. A method of diagnosing a condition or disease associated with the expression of NSYN-1 in a subject, comprising administering to said subject an effective amount of the pharmaceutical composition of claim 21.

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23. A pharmaceutical composition of claim 21, wherein the antibody is labeled.

24. A method of diagnosing a condition or disease associated with the expression of NSYN-1 in a subject, comprising administering to said subject an effective amount of the pharmaceutical composition of claim 23.

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25. A method of preparing a polyclonal antibody with the specificity of the antibody of claim 9 comprising:

- a) immunizing an animal with a polypeptide of SEQ ID NO:1 or an antigenically-effective fragment thereof under conditions to elicit an antibody response;
- b) isolating animal antibodies; and
- c) screening the isolated antibodies with the polypeptide thereby identifying a polyclonal antibody binds specifically to a polypeptide of SEQ ID NO:1.

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26. An antibody produced by a method of claim 25.

27. A pharmaceutical composition comprising the antibody of claim 26 in conjunction with a suitable pharmaceutical carrier.

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28. A method of making a monoclonal antibody with the specificity of the antibody of claim 9 comprising:

a) immunizing an animal with a polypeptide of SEQ ID NO:1 or an antigenically-effective fragment thereof under conditions to elicit an antibody response;

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b) isolating antibody producing cells from the animal;

c) fusing the antibody producing cells with immortalized cells in culture to form monoclonal antibody-producing hybridoma cells;

d) culturing the hybridoma cells; and

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e) isolating from the culture monoclonal antibodies which binds specifically to a polypeptide of SEQ ID NO:1.

29. A monoclonal antibody produced by a method of claim 28.

30. A pharmaceutical composition comprising the antibody of claim 29 in conjunction with a suitable pharmaceutical carrier.

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31. The antibody of claim 9, wherein the antibody is produced by screening a Fab expression library.

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32. The antibody of claim 9, wherein the antibody is produced by screening a recombinant immunoglobulin library.

33. A method for detecting a polypeptide of SEQ ID NO:1 in a sample comprising the steps of:

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a) combining the antibody of claim 9 with a sample under conditions to allow specific binding; and

b) detecting specific binding, wherein specific binding indicates the presence of polypeptide of SEQ ID NO:1 in the sample.

34. A method of using an antibody to purify polypeptide of SEQ ID NO:1 from a sample, the method comprising:

a) combining the antibody of claim 9 with a sample under conditions to allow specific binding; and

5 b) separating the antibody from the protein, thereby obtaining purified polypeptide of SEQ ID NO:1.

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